

NIKKELVERK

A GLENCORE COMPANY

Handbook for contractors at Nikkelverk

This is not necessarily the most recent version of the document – see www.nikkelverk.no for the current, updated version.

REVISION HISTORY

Revision no.	Date	Section	Page(s)	Objective of change
3	March 2011	All	All	Original document
4	May	All	All	Updated scaffolding instructions
5	13/5-11	All	All	New section concerning angle grinders Revision history General corrections
6	11.09.11	3.3.10 2	17 8	New regulations for working at a height Work clothing
7	30.11.2012	2	7 8 9	Life-saving rules Control of entry and exit Regulations for use of reflective vests
8	17.10.2013	3.3 1, 3.3.5 3 2.2	19 6, 18 12 9	Regulation on electrical equipment in confined spaces New front page with new Logo and company name Changed text regarding JSA and TSF to get same text in this handbook and HSE-handbook Foreign certificates Time-recording
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10	25.11.2014	1 2.4 App. 2 App. 3 App. 4	4 11 24 28 30	Clarification regarding prequalification of sub-contractors Updated reference to regulation Minor changes New Updated reference to regulation

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Introduction

At Nikkelverk we are obliged to carry out HSE work according to the highest standards, in close cooperation with local operators and by following principles for sustainable development.

Via our HSE management system we ensure that we:

- Fulfill, and if possible, surpass the stipulations of applicable laws, directives, standards and regulations.
- Work constructively with the local community, public authorities and other involved parties.
- Identify, evaluate and handle risks to employees, the environment and surrounding communities.
- Establish goals for our HSE work and analyze our achievements through continual and precise reporting.
- Communicate and consult employees and suppliers in order to develop our HSE system.
- Ensure that employees are competent in safeguarding and taking responsibility for correct HSE within their own areas of responsibility.
- Limit environmental damage from our production by maintaining an effective use of natural resources and by reducing material consumption and the amount of waste.
- Contribute to maintaining biological diversity.
- Plan, design, operate and decommission plants in a manner that safeguards principles for sustainable development.
- Safeguard basic human rights.
- Determine the direct and indirect cause of undesirable incidents and hazardous situations, and implement action that prevents these from reoccurring.

Purpose

This contractor handbook is designed to provide our contractors with a good overview of our HSE routines and to provide operational guidelines to the individuals working at our company. The regulation in the contractor's handbook applies to both contractors and sub-contractors.

HSE and our contractors

As a contractor with Nikkelverk, we expect that you as a company focus on HSE improvements. Being able to demonstrate a good safety record (H-value or similar) is an important criterion for us when evaluating tenders. It is an objective that all persons working at our company, employees and hired personnel, shall have a conscious attitude to HSE, in all work they perform. **The Nikkelverk has the policy that all contractors must be prequalified and approved for work on site.**

Use of sub-contractors

The contractors are responsible for the follow-up of their own sub-contractors. All use of sub-contractors on site at Nikkelverk must be pre-qualified and approved by Nikkelverk.

Request to report undesirable incidents

When your personnel perform work at our company, we expect that they report undesirable incidents, near accidents/near-misses and similar. This is done by notifying their contact person about the incident. Reporting undesirable incidents is an important part of our preventive work, and must not be considered to be negative 'telling tales'. It may well be that reporting an issue leads to the prevention of a serious accident.

Contact and follow-up

For all our contractors, we have defined a responsible contact person. This person is the main contact for you as a company.

We continually follow up our contractors and will invite them to meetings, to discuss HSE development and incidents, supply quality and similar, as required.

General section

All contractors with framework agreement shall perform daily safety meetings. All personnel from contractors that are to perform work at Nikkelverk must have completed a safety course in advance. This course is taken online and enrolment can be arranged by contacting the Reception, tel. +47 38 10 10 10. The course contains information concerning the company's safety and protection requirements, the company's environmental policies and general environmental issues. In addition, the contact person will inform of any particular issues regarding special awareness in an environmental context at the relevant workplace.

The part of the course on performing hot work is part of the ordinary safety course.

Persons who are to perform works of a short duration and do not wish to take the safety course must be supervised by an employee of Nikkelverk as long as this person is carrying out work at the company.

All persons, on arrival at the company on the first day, must contact the Reception. Our safety manual and a hard hat badge will be given out - these document the approved safety course. This certification is valid for two years. The Reception will also notify of the contact person within the company.

In order to perform work in the various departments, further localized safety training will be required. The Foreman of the relevant department is responsible for this training. You must have documentation of completed local training in the Safety Handbook.

If you are to work in areas with electrical current hazards, a separate electrical hazard safety course must be completed. Contact the Electro Dept.

Working at a height also requires separate safety training. The Personnel Dept. (Training Manager) has an overview of courses.

When working close to high-voltage cables or conductor rails, additional training must be given by a qualified electrician.

When working in the sulfuric acid factory, additional safety training is required - this will be provided by the Foreman Calcination/sulfuric acid factory.

There are requirements in respect of various work permits within the company.

Written work permits have three codes:

Red is used for hot work in fire and explosion hazard areas,

Yellow is used for hot work in general.

White is used when:

- A: Working in tanks or confined spaces
- B: Working on pipes that carry hazardous chemicals
- C: Excavating in ground - working in poorly accessible places
- D: Cold work in safety zones.
- E: Work in electrical rooms, close to busbars, close to high voltage
- F: Work with Vinylester or Polyester

See procedure at the back of this booklet, Appendix 1

Persons speaking a foreign language

Employees from contractors that do not understand Norwegian will be subject to separate regulations that will be adapted in each individual situation. Regulations will be drawn up in cooperation with the HSE Dept. (Safety Manager). Persons speaking a foreign language, after completing an online safety course, can work in the area; however, they must receive additional information concerning evacuation procedures in the event of an alarm.

Information about local circumstances

The appointed contact person must ensure that contractors are referred to the responsible Foreman for the relevant department in order to receive the necessary information concerning local regulations and hazards. He must also investigate whether there are any significant issues in relation to the assignment that have changed since the order was issued and ensure coordination with other works being carried out in the area.

The information concerning local circumstances, at the very least, shall include:

- ✓ Who should be contacted in the department
- ✓ Daily reporting/signing-in, in the control room before starting work
- ✓ Hazardous circumstances (gases, corrosive liquids, fire/explosion hazards etc.)
- ✓ Any mandatory requirements in regard to safety equipment
- ✓ Requirements in regard to work permits
- ✓ Information concerning the use of emergency masks
- ✓ Information concerning the location of emergency exits
- ✓ Evacuation procedures in the event of an alarm

Before a contractor starts a new assignment at Nikkelverk, the contractor's Foreman **MUST**, without exception, consult the Nikkelverk contact person.

Risk assessment

In addition, we have other systems that apply to safety.

Before a task is started, a systematic step-by-step review of all risk elements must be carried out, in advance of a specific task or operation, so that measures may be

taken to eliminate or control the identified risk elements. This is done by carrying out a Safe Job Analysis (SJA) or by completing a TSF form.

TSF checklist

The purpose of completing the checklist TFS is that the operator / Contractors must identify and - by implementing measures - have control over risk .

TSF checklist should be used on all maintenance or installation work not defined by our own working and operating regulations . This also includes working at heights and working in manholes and culverts below ground level. Replacement or installation of the operating equipment and working on electrical installations are also covered by TSF checklist. The checklist should be reviewed and completed before the work begins. All participants in the work operation shall sign the checklist. When work is completed checklist shall be kept for 2 months in the shop, office or other suitable location.

Executing skilled worker is responsible for the TSF form filled out and kept at the work site while work is in progress. When work is completed, the form must be kept in workshop / office or where the worker is based. The form shall be kept for two months

SJA

Safe Job Analysis (SJA) is a systematic, step by step review of all risk factors in advance of a specific task or operation, so that steps can be taken to eliminate or control the identified risk factors during preparation and execution of the work or operation.

A checklist of work needing SJA is listed in the table below. If all questions are answered with “yes”, an SJA must be performed.

Checkpoint if SJA is needed	Yes	No
Involves work activities with increased risk? Eg.: <ul style="list-style-type: none">- Fire / explosion or- Involving hazardous substances or- Work at height (> 2 m) or- Unknown Operation or- Critical equipment		
Is the work comprehensive and complex (involving more people and / or groups)?		
Is the task without work instruction or procedure?		

If the work involves heavy lifting with temporary lifting devices (mobile cranes etc), the company procedure for lifting operations must be followed.

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2 General safety regulations and mandatory safety equipment

2.1 Life-saving rules

Objective

The life-saving rules are designed to prevent our employees, contractors and other guests becoming exposed to situations that can have fatal consequences if anything should go wrong. The regulations shall contribute to make Nikkelverket a safer place and bring us closer to our objective of zero injuries. The life-saving rules are the final barrier that will prevent a fatal accident.

Rules

No.	Rule	
1	Never walk under a suspended load	
2	Always ensure you have the required permit before entering confined space	
3	Always be secured when working at a height	
4	Always use the recommended safety equipment when handling chemicals	
5	Release and isolate power sources when working on equipment	
6	Never disable a security barrier without permission	
7	Do not breach the security zone between vehicles and pedestrians unless you have received a ready signal	

Reporting breaches of lifesaving rules

Contact the person you observe breaking a rule and remove the person from the hazardous situation.

Explain why you considered the situation to be dangerous, and if possible state which rule it applies to.

Enter the deviation into Synergy, or report to someone who can enter the deviation in for you; however, **do not name the person in the deviation report.**

Ensure that the HSE Manager and/or the Head of Department is notified of who has breached the regulation, so that the incident can be investigated.

Follow-up

Breaches of life-saving rules will be investigated and will lead to consequences. The degree of consequence will vary from incident to incident.

2.2 Access control and time registration

Objective:

To ensure that the company, at all times, has an overview of all persons that are on the company premises, an access control system has been set up. A specification of the system and the practice that must be followed is contained in Appendix 2.

Responsibility

The access system is the responsibility of the Security Manager; however, Reception is responsible for daily follow-up and control.

Control of entry and exit

In addition to electronic registration and CCTV monitoring, unannounced checks of persons entering and exiting company premises will be carried out. This applies to both pedestrians and vehicles. Checks will be carried out at sporadic intervals by an external security company. These also fulfill the requirements of ISPS regulations. The checks will include ID confirmation and visual checks of the vehicle's cabin and trunk/load area.

When requested to do so, personnel must be able to show the company's electronic access card with picture, or approved ID documentation in the form of a driver's license or bank card with picture. If approved ID cannot be shown on access to the company, the Foreman, Head of Department or the person who is expecting the visitor can be contacted. These can verify the ID and ensure that the person is registered in the visitor system.

The terminal Security Manager or his deputy shall carry out random checks of vehicles and personnel within the ISPS area.

On entry/exit, a brief visual check must be carried out, or camera monitoring, to ensure that only authorized personnel are in the vehicle.

When passing through barriers, only the driver is permitted to remain in the vehicle. Passengers must get out and pass through the rotating gates.

Time registration

All contractors shall use the corporate timesheet system for contractors.

2.3 Regulation of internal traffic at Nikkelverk

The company has separate regulations for internal traffic on company premises. These regulations are listed in Appendix 3.

2.4 Mandatory safety equipment

General

There is a number of circumstances at the site that can lead to injury to life or life, if the necessary precautions are not taken.

Therefore, both general and local mandatory regulations are in place, concerning the

use of various types of personal safety equipment. All areas with mandatory regulations must be specified in the applicable working/operating regulations and must also be marked with signs.

The superior department management or Foreman must ensure that the employee is made aware of - and follows - the mandatory regulations.

The following mandatory regulations apply:

Hard hat, eye protection and safety footwear

There is a general mandatory requirement for the use of hard hats, eye protection and safety footwear throughout the entire company area, including production and maintenance departments. An exception to this regulation is when an employee is going to or leaving his/her workplace before and after a work shift.

Work clothing must be approved according to standard EN 471, **class 2**. This means that the materials must have an approximate luminous surface of a minimum of 0,5 m² and a reflective area of at least 0,13 m², and must be marked with the company logo.

The same mandatory regulation applies to visitors to the company. An exception to this regulation applies to the cafeteria area, technical administration, HSE building, the main laboratory and the administration building. In these areas, a reflective vest is adequate.

'Eye protection' means: safety glasses, helmet visors, welding masks and full-face masks.

Private spectacles are not considered to be adequate eye protection.

Areas with exceptions are:

- Office buildings and office workplaces.
- The main warehouse.
- The laboratory building.
- Control room, dining and rest room.
- The sewing room in Nikkelservice department.

Wooden shoes (clogs) with toe protectors are not permitted to be worn in production and maintenance departments. The exception is office buildings and office workplaces and the main warehouse.

*) The area between the parking lot and to the changing rooms, for those who store their work clothes there, is exempt from this regulation. Those who change clothing in offices are exempt, to their offices. The same applies when these employees are leaving after a shift. This regulation must not be interpreted such that those who are on their way to and from work are thereby prevented from entering the Shift Manager's office in order to read the shift journal or to pass on a final instruction before they leave the company area; such practice is accepted.

Due to the increased hazard of collisions occurring between pedestrians and vehicles in dark periods of the year, reflective vests with visibility grade 2 are mandatory when walking within the company area, from and including 1st September until and including 30th April. The exception to this regulation applies to visitors to the company that can walk from the main

gate to the Reception building (or the Shift Manager's office outside of Reception opening hours), where they can loan a vest. It is also permitted to walk the same path without a vest for employees that have forgotten their own vest and therefore must loan one from the Reception.

Work clothes used at Nikkelverk must not be taken home. This is in accordance with Norwegian legislation, Regulation on performing of work § 3-17. The employer shall ensure that all work clothing is cleaned at a commercial laundry.

Breathing apparatus

Emergency masks are mandatory when persons are within the company area.

Other areas may have local mandatory regulations pertaining to breathing apparatus. These areas must be marked with signs.

Gas mask

A gas mask must **always** be used when working on/intervention in gas piping or equipment.

Ear defenders

Ear defenders must be worn in areas or work operations that are marked as a **noise zone** (where the equivalent noise level exceeds 85 dBA). In order to improve traffic safety, ear defenders **with radios** must not be used when coming and going both inside and outside the company.

3 Certificates and internal regulations

Truck driving

A truck certificate is required for all truck driving.

- Leaving a truck with the ignition on is not permitted. This must be deactivated.
- Sitting in/on a truck without a truck certificate is not permitted.
- No more than one person is permitted on a truck, with the exception of during training.

Lifting equipment/devices

Only lifting equipment/devices that are authorized and/or approved with the year's color mark may be used.

Walking under a hanging load is not permitted.

All faults and defects in lifting equipment must be reported to the Foreman.

Crane driving

A crane certificate is required for:

- Operation of all lifting equipment with a lift capacity of over 2 tonnes.
- All other cranes in which the lifting operation can lead to danger to life or health. If in doubt, contact the Safety Officer.

Foreign certificates

It is not automatic that foreign certificate of competence regarding use of truck, crane and earthmoving machines can be used in Norway. To use a foreign certificate of competence, seek the Norwegian Labour Inspection Authority for permission.

Permission granted when training underpinning the foreign certificate of competence is not significantly different than that required for the corresponding certificate of competence in Norway. The applicant must document the number of hours of theoretical and practical training as the basis for the certificate of competence.

The application must be submitted Norwegian Labour Inspection Authority in each case.

Scaffolding and ladders

Only qualified personnel are permitted to erect scaffolding. (cf. Maintenance Handbook, Volume I chapter 1.4). The use of aluminium ladders is not permitted at the company. Before scaffolding and ladders are used, they must be examined to ensure they are in a fault-free condition and that they are secured against sliding on the surface they stand on.

See Appendix 4 "Instructions for the use of scaffolding at Nikkelverket" at the back of this booklet.

Compressed air

Compressed air must never be used to blow work clothing clean and the air nozzle must never be aimed at other persons.

Electrical systems

Work operations must not be started in the vicinity of high voltage or low voltage systems without authorization from the Electro Manager.

All work or presence in the Electrolysis Department (nickel, copper and cobalt dept.) is not permitted without receiving advance information concerning the hazards that may be present and the necessary precautions. (cf. Maintenance Handbook Chapter 8.2.7)

Barriers

Areas in which there is a risk that persons may fall down, be struck by falling objects or are dangerous for other reasons, must be cordoned off with a temporary fixed barrier or free-standing stanchions strung with warning (barrier) tape.

Taped-off areas

Barrier tape is an excellent tool for securing an area, so that persons do not enter a hazardous zone. It is very important that barrier tape is not abused and that it is respected when in place. Barrier tape must only be used for temporary cordoning of areas, until more permanent measures are taken.

Setting up barrier tape.

Red and white barrier tape must be set up around the ENTIRE area that contains the hazard (including all access areas).

If it is necessary to cordon off a walkway or road, an alternative route must be arranged and signage erected.

If personnel have to leave a cordoned off area, it must be marked with the following information:

- Reason for cordoning off the area
- Responsible person and telephone number
- Expected duration of barrier/cordon

Plastic signs are available for this purpose, which can be attached directly to the barrier tape. These are available from the warehouse.

Respect barrier tape that has been set up!

- Barrier tape means "no access permitted"!
- If, in any event, you have to cross the barrier tape, this must be after the risk has been assessed and in consultation with the person that is listed on the barrier tape, or the Foreman in the area. The use of additional safety equipment must be evaluated.
- A simplified version of a written risk analysis when inside barrier taped areas is under evaluation.

Remove barrier tape as soon as the hazard is no longer present!

- Unnecessary long-term cordoning off with barrier tape undermines the system.

Standard colors for marking:


Merking av nødutganger etc.


Merking av stolper, hjørner,
dørkarmer, porter etc.


Merking av traller, trucker,
faresoner etc.


Linjemerking på gulv

Standard signs for barrier tape



Additional requirements for angle grinders used at Nikkelverket:

1. Small angle grinders, up to 5" must have:

- Safety guard (mandatory for old and new grinders)
- Angle grip (mandatory for old and new grinders)
- Automatic safety connection/kick-back stop
- Protection from restarting after disconnection/power failure

2. Small angle grinders, up to 5" should also have:

- Safety switch
- Vibration balance (Autobalance)
- Vibration damping grip
- Brakes

3. Large angle grinders over 5" must have:

- Safety guard (mandatory for old and new grinders)
- Angle grip (mandatory for old and new grinders)
- Automatic safety connection/kick-back stop
- Protection from restarting after disconnection/power failure
- Soft start
- Safety switch

4. Large angle grinders over 5" should also have:

- Vibration balance (Autobalance)
- Vibration damping grip

New machines must fulfill the above requirements from 01.10.2010.

3.1. Work involving flammable hazards

3.1.1 General

On the company's premises, with the exception of the workshops, a written work permit must be obtained for all work that can involve a fire hazard, as a result of the work to be carried out. Safety officers may grant temporary permission to set up workshop sites within the operational departments.

Principally, no work involving a fire hazard shall be carried out in areas classified as fire or explosion hazard areas. If, however, it is necessary to carry out such work, a work permit must be completed on a **red** standard form

If a written work instruction is not available that clearly states how the work is to be carried out, the Head of Department and the Safety Manager (or their deputies) must review and sign the work permit before the work can commence.

If there is a written procedure, approved by the Head of Department and the Safety Committee, it is sufficient that the person in authority issues and signs the work permit.

The Safety Manager or his deputy must evaluate whether it is mandatory to have a qualified contingency group present when part or the whole of the work is carried out. Please refer also to separate regulations for repairs and maintenance work, specified in ABF, for each individual plant.

3.1.2 Certification

Welding, flame cutting, soldering and other types of hot work may only be carried out by employees and contractors that have:

- The required professional qualifications
- Valid certification, awarded after safety training by the Environment & Safety Department

For Nikkelverk employees, the certificate is valid for 3 years and for contractors 1 year.

The Reception maintains an overview of certificates issued.

3.1.3 Issuer of work permits

Written permission to perform work involving a fire hazard must be issued on a **yellow** standard form, by the Foreman or another who has granted access to do so in the relevant area.

The person issuing the work permit is personally responsible for ensuring that the procedure stated on the reverse of the form is followed and that the worksite is safely secured before work commences, and as long as it continues. If there are special circumstances at the worksite that heighten a local hazard, the issuer must contact the Head of Department for further guidance.

3.1.4 Recipient of a work permit

A work permit is issued to specific persons, "Professional Leader" and "Executing Tradesman" (person performing the task) and always applies for a limited time period.

The professional leader has a general leadership responsibility and must ensure that also the executing tradesman applies all necessary measures to secure the work to be carried out, before, during and after the operation.

For the executing tradesman, normal responsibility applies, including any additional responsibility as group leader. The executing tradesman must ensure that the work is carried out in such a way that there is no risk of fire.

He must sign the work permit before commencing the work.

3.1.5 Completion and post-inspection

Before the executing tradesman can leave the worksite, he must:

- Be absolutely certain that there is no danger of subsequent combustion and fire due to sparks, smoldering etc.
- Ensure that the worksite is tidied and cleaned.
- Sign the work permit, add the date and time, and hand this over to the issuer or the control room for the relevant plant.

The issuer of the work permit or the person delegated authority must, at the earliest 30 minutes after the work has been concluded:

- Inspect the worksite to control that there are no issues that can cause a risk of fire.
- Sign the work permit, add the date and time, and at the latest at the end of the working day, send this to the Contingency Inspector (office at Shift Manager)

3.1.6 Extended work permit

The work permit for hot work can be extended by the issuer, if the work is not completed within the planned time. This applies only to work permits for hot work (yellow). The extension can only be given within the time frame that the issuer is

present at the company and is able to carry out the post-job inspection. Any extension beyond this will require the issue of a new permit. This can be given by the task manager and the Shift Manager for the entire company. Work permits for hot work in areas containing flammable goods cannot be extended. A new work permit and work certificate must be issued.

3.1.7 Welding and flame cutting equipment

All welding and flame cutting equipment must be installed on an approved trolley and must be equipped with heat-resistant gloves and shut-off keys/handles. A fire extinguisher must always be available to hand.

When the work is completed, or at the end of the working day, the equipment must be placed in a designated storage area. These have a yellow information sign, marked 'P' and have a triangular warning sign.

If the equipment, for any reason, must be parked in another place, the person responsible for the work must obtain permission from the Contingency Inspector or the Safety Manager.

Both full and empty gas containers must be stored in a vertical position and be separated according to gas type. During storage, the valve must be fitted with a security lock.

The containers must be stored on approved trolleys or chained to the wall.

3.2 Hot work, in areas that carry a fire/explosion hazard

3.2.1 Work permits

Normally, no hot work shall be carried out in areas that are classified as carrying a risk of fire and/or explosion. However, in the event that this must be done, a work permit must be completed on a red standard form.

If a written work instruction is not available that clearly states how the work is to be carried out, the Head of Department and the safety Manager (or their deputies) must review and sign the work permit before the work can commence.

If a written procedure is available, approved by the Head of Department and the safety Committee, it is sufficient that a person delegated authority signs the work permit.

In order to prevent unnecessary downtime for tradesmen, and to give the person who signs the work permit the opportunity to plan their working day, ordering red work permits shall be done as follows:

1. Red work permits must be ordered at the latest before 12.00, one day in advance.
2. An order is made using the calendar on the safety page in IntraFNIS (click on the link "Order for red work permit"). The order is submitted by clicking on the 'New' button at the top left and by completing the form. Note: Do not put a cross in the 'Full Day' field.
3. The certificate issuer will acknowledge the received order.
4. Any necessary risk-reducing measures (extinguishers etc.) must be in place when the certificate issuer and other issuers of the work permit (as described above) meet up at the agreed time and review the operation along with the executing tradesman. The certificate issuer shall thereafter carry out gas measurement checks before the work permit is issued.

5. Notify of any changes! Changes in the requirement for a red work permit (weather-dependent work, sickness absence etc.) must be notified on an ongoing basis by changing the order directly in the calendar, or by telephone if short notice.
6. Work permits ordered with sufficient notice will be given priority, insofar as a postponed issue of a work permit will not lead to danger to health, the environment and safety, or negatively affect production.
7. Those involved in issuing red work permits can subscribe to email notifications (click on 'Actions/Notify me') and can link the calendar directly to Outlook ('Actions/Link to Outlook')

3.2.2 Watchman

The Safety Manager or his deputy must evaluate whether it is mandatory to have a qualified contingency watchman present when part of or the entire work is carried out.

3.2.3 Gas measurement/certificate

Before work carrying a risk of fire is started in areas with an explosion hazard, gas measurement must be carried out and a work certificate must be issued by an authorized person.

The company has been given a dispensation from the regulations relating to working in tanks, order no. 114 §28, final section, cf. order no. 114 §31, and is permitted to maintain an independent register of certificate issuers. Martin Storm Larsen is registered as the company's senior certificate issuer until 31.07.2014, and is responsible for ensuring that qualified certificate issuers are used within the company and that a register is kept of certificate issuers (i.e. content in chapter 5.4.3 above). This register must be available for inspection by the Labor Inspectorate.

3.3 Work permit system for cold work

3.3.1 Objective

This procedure applies to the performance of installation, maintenance and inspections in areas that do not have a fire or explosion hazard (cold work). For work involving a fire risk in areas that are also covered by white work permits (working in tanks etc.), a yellow work permit must be used; however, the requirements in respect of safety stated below must be followed, in any case.

3.3.2 Objective

The objective of this procedure is to ensure that all work that may involve risk is reviewed in advance, so that injury to personnel is avoided. Nikkelverk aims to maintain a high standard of preventive safety work and therefore requires that a TSF form or a work permit is used in connection with all maintenance or installation work that is not defined by a specific work or operation regulation. The procedure applies both to company employees and to contractors working at Nikkelverk.

3.3.3 Definitions

3.3.3.1 Tanks

Tanks, spaces and pipes where flammable or noxious substances can have been stored. Work in tanks is subject to the directives in the regulations pertaining to working in tanks, and requires a work certificate (gas measurement documented on the work permit form). Exceptions from the requirement for work certificates may, however, be granted by the Safety Committee, for routine tasks that are adequately specified in procedures.

3.3.3.2 Enclosed spaces

An 'enclosed space' shall have all three characteristics:

1. It is not constructed for the continual presence of persons. This may mean that it does not have correct ventilation, lighting or temperature control.
2. It is large enough for a person to enter the area.
3. It has a limited possibility of escape (in and out route)

Some examples of an enclosed space may be (but are not limited to): Manholes, pump/pipe gulleys, boilers, pressure filters, drums and tanks.

Enclosed spaces in which works or inspections are regularly carried out are listed in Appendix 5. Amendments and additions to the list must be reported to the Safety Officer for updating. These areas should be marked with the sign "Enclosed space - entry requires a work permit". A point list must be created for any work carried out in the room, this must be readily available. In many cases, both definitions above (enclosed space and tank) will apply. All work in enclosed spaces and/or tanks requires a work permit (red/yellow/white).

3.3.3.3 Issuer

The person qualified to issue a white work permit. The person must have completed an issuer course.

3.3.3.4 Executing tradesman

The person responsible for the work operation to be carried out. The person can, along with the other participants in the work operation, himself review the TSF, checklist and sign it. If the work falls within the requirements for a written work permit,

the issuer must be contacted and he must review the work permit at the work site along with the executing tradesman.

3.3.4 White work permit.

- A. Working in tanks and enclosed spaces
- B. Work carried out on pipes/equipment that carry hazardous chemicals such as H₂, SO₂, Cl₂, HCl, NaOH, H₂S, H₂SO₄, H₂O₂.
- C. Excavating in ground - working in inaccessible terrain such as steep slopes with a risk of loose rock.
- D. Working in safety zones
- E. Work in electrical centrals, close to busbars, close to high voltage
- F. Work with vinylester or polyester

The white work permit must be signed off when the work is completed, and returned to the issuer, who will send a copy to the HSE Department c/o the Safety Officer. The copy may be scanned and sent electronically.

The work permit is given by the person responsible for the equipment /area, and in safety zones by the department in which the equipment/issue is protected by the safety zone.

3.3.5 TSF checklist

A TSF checklist must be used on all maintenance and assembly work that is not defined via a separate job and operation regulation. This also includes working at a height and work carried out in manholes and culverts below ground. Replacement or installation of operational equipment and work on electrical systems is also encompassed by TSF checklists. The checklist must be reviewed and filled out before work commences. All participants in the work operation must sign the checklist. When the work is completed, the checklist must be stored for 2 months at the workshop, office or other suitable place.

3.3.6 Working in tanks

The following safety rules must always be applied:

The tank must be empty, cleaned and properly ventilated. Adequate ventilation must be provided (large enough opening in the top and bottom, alternatively, an active air supply with compressed air hose or mechanical fan).

Working in tanks normally requires a work certificate and gas measurement (see chapter 3.1 above). If it is not possible to bring the gas concentration level under the applicable administrative norm (ADN), or if there is a risk of oxygen deprivation, a fresh air pump system must be used. For brief inspections of tanks where there is no danger of oxygen deprivation, a regular gas mask may replace a fresh air pump system. A gas mask must always be to hand in areas in which there may be a danger of gas. Oxygen meters must be worn outside work clothes (to be brought to site by certificate issuer) and attached to, e.g. a breast pocket.

All piping leading into the tank (gas or liquid) must be shut off or disconnected by other means.

All moveable electrical equipment must be secured against starting up by using a locked safety switch or by removing fuses (cf. Maintenance manual chapter 8.1.5)

Battery-driven hand torches must be available in case of a power failure.

In narrow conductive environment should hand lamps have supply from SELV circuit. (SELV is an acronym for "safety extra low voltage")

Voltage via isolertrafo <50VAC, <120VDC

Hand tools and portable equipment can be input via SELV, or electrical separation, provided that only one device or one tool can be connected to the secondary winding of the isolation transformer.

Cordless tools, hand lamps etc are a good alternative if the voltage is below 50 VAC, 120 VDC.

If doubt the electrical department contacted when work is planned

A proper escape route must be set up, and at all times there must be a watchman on the outside, who is able to get help if a problem should occur. If the person inside the tank loses consciousness, the watchman must not enter the tank before the rescue team has arrived.

Fall safety gear must be used where this is mandatory (>2m height).

The control room must be informed that the work is about to commence.

3.3.7 Working in confined spaces

Working in confined spaces involves a greater element of risk, and therefore a risk analysis is required and initiatives must be taken before work commences (white work permit). The same precautions stated above in the chapter relating to working in tanks must be considered; however, these may not always be relevant. The most important point is to ensure a proper escape route.

If there is a risk that such areas can have inadequate oxygen, this must be checked, before climbing into, for example, a manhole. Working in enclosed spaces requires a work permit.

3.3.8 Work carried out on pipes/equipment that carry hazardous chemicals such as H₂, SO₂, Cl₂, HCl, NaOH, H₂S, H₂SO₄, H₂O₂.

Pipes must be drained and ventilated in advance. When working on pipes that carry noxious gases such as chlorine (Cl₂), sulfur dioxide (SO₂) or hydrogen sulfide, (H₂S), a gas mask must always be available to hand. A mask must always be used when opening flanges, when disconnecting valves etc.

Eye protection (face visor and/or chemical-resistant goggles) must be used on all interventions in pipes, valves or pumps carrying corrosive liquids.

For intervention in pipes, valves or pumps that carry sulfuric acid or lye, full protection must be used (i.e. waterproof clothing, helmet with visor and neck protection, gloves and boots).

This also applies when loading and unloading sulfuric acid, lye and hydrogen peroxide.

For intervention in pipes, valves and pumps that carry hydrogen, hydrogen sulfide or oxygen (risk of explosion), a work certificate must be issued (gas measurement).

3.3.9 Excavation in ground

Excavating in the ground requires a written work permit.

Checks should be made in advance for important cables or pipes in the area being excavated. When working in ditches or cuttings, precautions should be taken to ensure that the sides or walls cannot collapse. Access to the ditch/cutting must also be secured.

3.3.10 Working at a height (two metres or more above the ground)

All work carried out at a height must be done in a secure and thoroughly planned manner, so that injuries are avoided.

Ladders over 6 metres in height must not be used. If climbing a ladder up onto a roof, the ladder must protrude at least one meter above the edge of the roof. Ladders must be secured, preferably at the top. At heights of over 5 metres, the ladder must be secured.

Lifts: Operators of lifts must have documented training. The instructions in the user manual for the lift must be followed. Self-powered lifts must only be used on level surfaces. For indoor operation: Note that there may be weak floors that cannot tolerate the weight of a personnel lift. Check this before the work is started.

Scaffolding must be erected and used according to regulations. Only certified personnel may assemble or amend the construction of scaffolding. If the scaffolding is higher than two metres, an approved railing must be installed, with a handrail, knee rail and foot rail. On the

access route to the scaffolding, there must be a green sign that states technical details about the scaffolding.

For all work carried out at a height, a written risk analysis (TSF form) is required. Tools and loose objects must be secured with a strap. Hand tools can be secured with a hand strap. A safety net can also be installed in the work area underneath the scaffolding.

When working on a roof, construction and disassembly of scaffolding, or in which there is a danger of falling, fall safety equipment must be used. Fall safety equipment must be used in accordance with the user instructions and use requires documented training. If fall safety equipment is required, there must always be one person present in the immediate area (in addition to the person using the fall safety equipment) that is able to initiate a rescue or notify others in the event of a fall. This person must sign in the appropriate place on the TSF form.

Glencore Nikkelverk has also developed a procedure for working at height. It can be obtained on request to the contact person

3.3.11 Responsibility

The executing tradesman has the responsibility for ensuring that the TSF form is completed and stored at the workplace, as long as the work is ongoing. When the work is completed, the form must be stored at the workshop/office where the tradesman has his/her base. The form must be stored for two months.

If the work requires a white work permit, the tradesman has the responsibility for contacting an issuer, who must write the work permit along with the executing tradesman. When the work is completed, the executing tradesman must return the work permit to the issuer, who will send a copy to the Safety Officer.

4 Injuries and 'near misses'

4.1. Reporting

Any employee/contractor that becomes aware of an injury or a possible injury situation must report the incident as soon as possible to his/her superior and to the responsible contact person at GNN.

4.2 Report of serious incident

In the event of any accident that causes, or is likely to cause sickness absence/reduction in work capacity and/or material damage assumed to be greater than NOK 100 000, also in the event of serious near-misses, the contractor must immediately notify the contact person.

Outside of ordinary working hours, the Shift Manager must be notified.

4.3 Follow-up

All injuries or possible injury/damage situations, relating to both persons and equipment, must be registered as soon as possible in the company system for deviation handling, in accordance with guidelines stated in chapter 10 of the Quality Handbook.

4.4 Investigation committee

In the event of a **serious incident**, Nikkelverk will set up an investigation committee. Representatives from the contractor must attend investigation meetings.

The Committee shall start the investigation as soon as possible and at the latest 24 hours after the incident occurred.

In the event of serious injury to personnel, the Foreman/Shift Manager must immediately ensure that the site at which the incident occurred is secured and left untouched until an order is given to the contrary.

4.4 Definition of injury types

LTI – (Lost Time Injury) Injury leading to absence from work

RWI – (Restricted Work Injury) Injury that leads to adapted work assignments

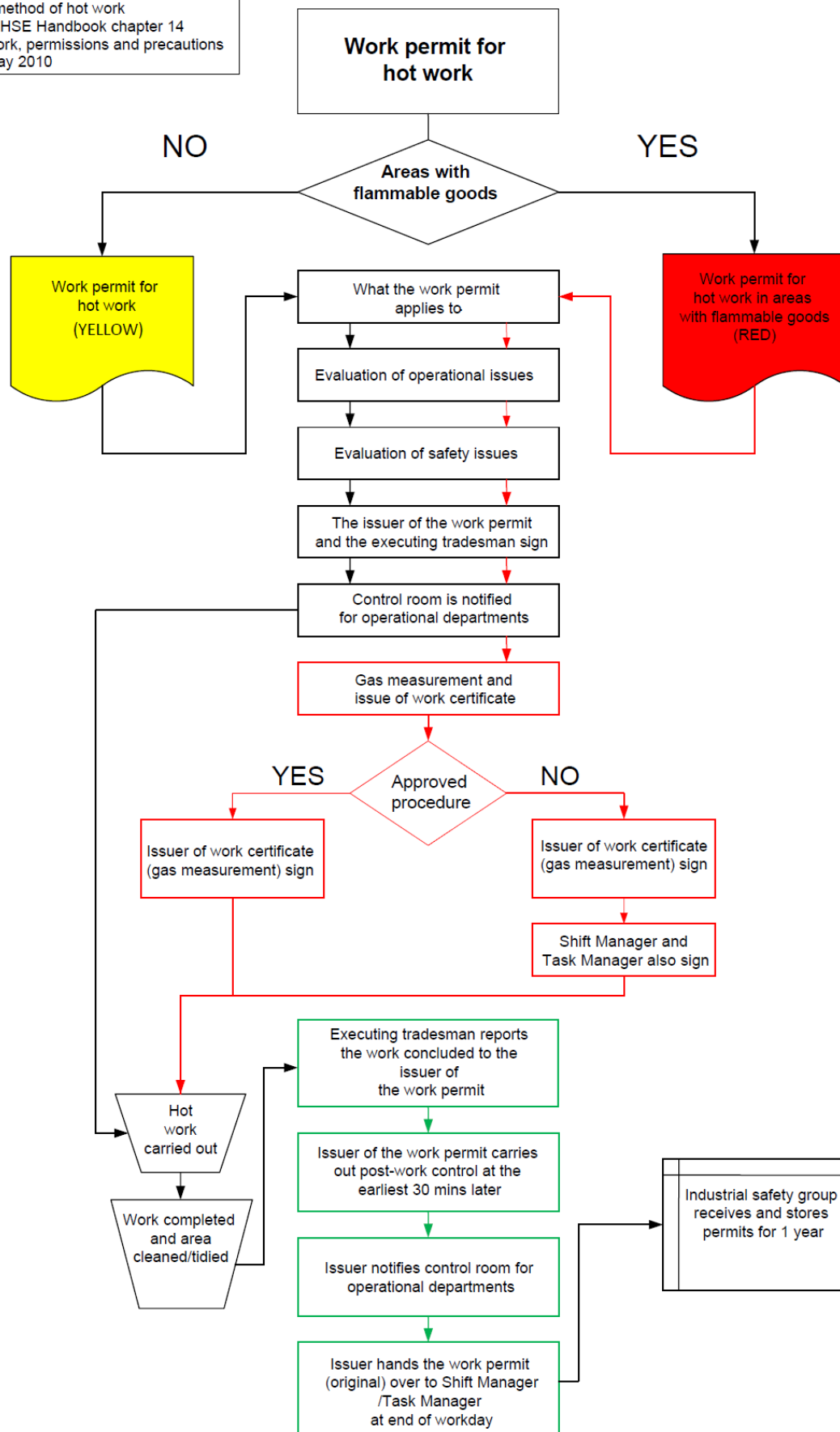
MTI – (Medical Treatment Injury) Injury that involves medical treatment

FAI – (First Aid Injury) Injury that involve first aid treatment

5. Appendixes

Appendix 1 – Schematic overview of hot work

Appendix: method of hot work
To chapter: HSE Handbook chapter 14
Text: Hot work, permissions and precautions
Date: 6th May 2010



Appendix 2 - Access control

Access control system:

The system is comprised of rotating gates for persons, barriers for cars and access cards for personnel, required in order to be able to enter the rotating gates and barriers.

Rotating gates:

There are two rotating gates at the main entrance. In order to pass through these gates, an access card is required. The cards are used in the card readers that are installed at the rotating gates. Only one person may pass through the rotating gates at one time. The access card must be used to enter and to leave.

If personnel forget their access card, the Reception/Main gate can be contacted using the intercom installed at the rotating gate. Entry and leaving through the gate must in such case be noted down by the main gate staff.

Barriers for vehicles:

There are two barriers at the main gate. There is also another barrier on the quay for heavy transport, requiring special permission. In order to gain access, an access card must be used.

If there are several persons in the vehicle, only the driver is permitted to remain in the vehicle when passing through the barrier. Passengers must get out of the vehicle and pass through the rotating barriers.

An exception is made for taxis and similar transport bringing visitors to the company. These must be registered at the Reception/Main Gate.

Vehicles that do not have an access card must use the intercom at the barrier to contact the main gate. The main gate staff will evaluate whether the vehicle is to be allowed in.

Access cards for contractors

Contractors working on-site may be granted numbered electronic access cards when documented safety-course is completed. This complies for workers and their foremen. The management of a contractor must use the electronic visitor registration system, even if they have completed the safety course. A responsible person from the contractor orders the cards in the Reception and sign out at delivery.

Loss of cards or cards that are not handed in after they have expired will require replacing at a cost.

The access card is only given for the working period. During long-term projects shall card renewed when safety course expires after two years.

For consultants or other contracted who need access to buildings with access control, this should be limited to only those areas of the building concerned need access to in order to perform the work.

Personnel with temporary work in the port area, can also be equipped with personal ID cards, but these should be limited to the time period the mission is expected to last in the port.

There must be strict control over who gets access cards, and these should always be relinquished when permanent or temporary work ceases.

Access Card must always be worn and one should be prepared to be controlled on-site. Other approved identification shall also be presented or readily obtainable.

Persons with access cards where given permission to take the car into business area, pass freely in and out as long as they have work assignments in the company and for the time it is given permission.

Visitors:

All visitors must be registered at Reception/Gate and always keep the visitor badge visible during your stay at the company. Registration takes place electronically, or exceptionally manually, by the visitor registers and get printed access card or by writing to visitor journal.

No visitors are allowed onto company areas without a guide. The guide is responsible for the visit and for ensuring that this is carried out safely. All visitors must wear a yellow reflective vest, lab coat, hard hat, safety glasses and carry an emergency breathing mask - they must be given training in how to use the mask. If the visitor has their own personal safety equipment with them, this may be used. From April 2009, exceptions are allowed for visitors that only intend to visit the administration building, the main laboratory, the technical administration building, the main changing facility/cafe/terrace and the HSE/medical surgery. Visitors to these buildings must wear a reflective vest.

Visitor sign out using the barcode on the visitor badge.

Only visitors that have a specific objective (to carry out works or submit tenders etc.) are allowed onto the company premises.

On arrival at the company, the Reception will admit the visitor(s) through the rotating gates. Visitors can contact the main gate personnel via the intercom.

If the visitor arrives in a taxi, the taxi can be allowed access via the barrier and the visitor is dropped off outside the Reception. The same applies if the visitors arrive by bus.

No visitors are allowed onto company premises until the person expecting the visit has been contacted and is ready to accept them. Normally, the person expecting the visitor(s) shall meet them at the Reception. The person hosting visitors is responsible for ensuring that they follow them back to the Reception/Main Gate.

Visitors to employees that do not have a connection with the person's work, must always be met by the employee at the Main Gate. This type of visitor must not be taken to the employee's place of work. The lounge area in the Reception can be used for informal meetings. As long as the visitor remains in the Reception, there is no requirement to sign them into the visitor log.

Goods deliveries:

Regular suppliers of goods and services to the company are permitted to hold access cards, which may be used to gain access via the vehicle barriers during normal

working hours. The card is personal and can't be used by others, even if the same car and art of deliveries happens. Outside normal working hours the Gate shall be contacted for permission to enter.

For larger deliveries where the driver does not have access cars should be parked in designated area in anticipation of unloading. No cars or trucks shall be admitted on business site outside normal working hours to wait for loading / unloading.

Appendix 3 - Internal traffic at Nikkelverk

Objective

The objective of this regulation is to ensure that walking, driving and other movement at Nikkelverk can be done in a safe and secure manner.

Applicable area

This regulation applies to all pedestrian and vehicle traffic on Nikkelverk premises.

Traffic rules at Nikkelverk

Speed

Unless signs indicate otherwise, the speed limit is 20 km/h.

Traffic

All persons within the area must wear approved work clothes and mandatory safety equipment. (This does not apply to employees arriving at, or leaving work).

Visitors must be issued with safety equipment and a reflective vest.

For all movement on Nikkelverk premises – sound equipment that can cause a distraction (ear defenders with radio, iPod, mp3 players etc.) is not permitted.

Parking of vehicles or setting down of goods on marked walkways is prohibited.

Cycling is prohibited.

Permission to drive/parking on Nikkelverk premises

All unnecessary driving within the company area is prohibited.

If the need should arise for the use of vehicles within the area, e.g. for transport of necessary equipment or tools, special permission must be obtained.

Contractors that have assignments on Nikkelverk premises must park in designated parking places and will be given a parking permit in Reception for the area. If the contractor moves to a new worksite, a new parking permit must be obtained.

If there is no permission to park in the area in which the contractor is to perform a task, only the shortest possible parking time is permitted, to load/unload tools/equipment etc. Thereafter, the vehicle must be parked in the designated parking place.

The parking permit must be easily visible in the window of the vehicle.

Vehicle requirements

All trucks must have driving wheels with a minimum of 3 mm tread depth.

All wheeled loaders and trucks must be fitted with warning sounds and flashing yellow lights when reversing.

The use of radios and music systems in vehicles is prohibited.

All trucks/ wheeled loaders that are in daily use at Nikkelverk must be fitted with 4 headlights: 2 upper and 2 lower.

All trucks/ wheeled loaders that are in daily use at Nikkelverk must have a speed limiter fitted, set at 20 km/h.

All wheeled loaders that are in daily use at Nikkelverk must have a reversing camera fitted.

Compulsory regulations

§ 3. *Basic regulations for traffic in the Road Traffic Act*

All persons must show due care and consideration and be vigilant so that danger and damage/injury is avoided, and such that other traffic is not unnecessarily obstructed or interrupted.

Nikkelverk is a production company and transport of raw materials and products takes place between the various sites. Therefore it is important that other traffic is aware of this and acts with due care and does not create situations in which this traffic is obstructed or interrupted.

Compulsory regulations for pedestrians

Pedestrians must walk on the marked walkways. Pedestrians must act with due care so that they do not expose themselves or others to dangerous situations. When crossing roads, pedestrians have a duty to ensure that this can be done in a safe, secure and proper manner.

Compulsory regulations for drivers

Internal driving of vehicles must be with due care so that dangerous situations do not arise. When crossing walkways, the driver has a duty to ensure that this can be done in a safe, secure and proper manner.

Prioritization of applicable laws and regulations.

The following laws and regulations apply to movement within Nikkelverk premises:

The regulations are stated in order of priority

- A. Regulations pertaining to internal traffic at Nikkelverk
- B. General and local signage.
- C. Road Traffic Act with regulations.

Use of vehicles on-site

Contractors shall inquire a permit for entry and departure by vehicle. The application will be delivered to the contact person at the Nikkelverk. The contact person may approve the application. He should also consider whether the vehicle has previously been used in an illegitimate manner.

Contractors who need to have the workshop cars inside the area have to park these on numbered parking-lot they receive in the Reception. Form specified parking place (number) to be located easily visible in the windshield of the car and the location must comply with parking place.

The vehicles must be parked / vacated so they do not hinder fire trucks and other vehicles. Wrong parking means that driving permit may be revoked.

Parking in security zones is prohibited.

Speeding (20 km / h) or other traffic misdemeanors which exposes driver, other road users and pedestrians at risk can result in confiscation of the driving license.

The vehicle shall not be used for passenger transport, only for equipment, tools and materials. Driving to / from the cafeteria, smoke space outside the company, etc., are not allowed and will lead to confiscation of driving license.

The purchase department will inform all contact-person about these regulations and that a critical assessment of the need for cars is conducted. The contact person notifies reception/Gate who issues such permits.

Contractors who daily and over longer periods need car on-site make a deal with the contact person. A fixed parking-lot is arranged. When parking elsewhere permission must be obtained at the reception.

Appendix 4 Ladders and scaffolding at Nikkelverk

General requirements

All companies that erect scaffolding and use ladders at Nikkelverk are at all times responsible for ensuring that the applicable regulations are followed.

Regulations that govern the construction of scaffolding are Regulation on performing of work chapter 17

Electrical hazards

For scaffolding that is erected in the electrolysis halls or other locations close to or at electrical systems with a danger of contact, the HSP department must be contacted in advance.

Safety initiatives are determined and approved by the HSP Department.

Selection of materials

Aluminium ladders must not be used.

It may not initially used scaffolding aluminum inside or near production facilities / equipment, but by conducting a SJA may be granted in individual cases.

Supplementary rules for working at height are provided in an internal procedure for work at height.

Appendix 5 - Overview of enclosed rooms/spaces at Nikkelverk

Department	Work site/work operation	Description
Calcination Plant	El-filter calcination plant	working inside
	El-filter cleaning plant H ₂ SO ₄	working inside
	Cooling pipe calcination plant	working inside
	Cyclones Calcination Plant	working inside
	Channels Calcination Plant	working inside
	Ovens Calcination	working inside and on top of
Oxygen production plant	Absorber O ₂ production plant	working inside
Oven 5	Briquette machine oven 5	
	“Myren driers”	inside
KL plant	NiCO ₃ filter KL	
	Grate press building KL	Over presser
Cu department	Under Cu 1-2-3	
Ni department	Other under Ni 3	
	Electrowinning tanks	Under and between
EMK/Crusher	Bag mill	working inside
	Tank tops 4th floor ML	upon
General at the company		
	Under Redler and bucket elevator	Entire nickel plant
	Under pipe trench	Entire nickel plant
Company premises		
	Loading crane quayside	Troen
	Catch dam around HCL tank	Working inside
	Filter thickeners	
	Chlorine bunker	

Appendix 6 Table of certificate issuers

Table 1: Overview of approved certificate issuers for the various gas measurement assignments

Sertifikatutsteder	Avd.	Tel.	All assignments*	9.1 HCl-burners	9.2 Leakage H2-factory	9.3 Startup H2-factory	9.4 Hot work in Co-refinery	9.5 Propan gas calcinator	9.6 Cold work in tanks	9.7 H2S leakage check
Ivar Thorstensen	On-line/Gasslab.	(6)1368	X							
Anne Lene B. Ilievski	On-line/Gasslab.	(6)1365	X							
Ingunn Vågsnes	HMS-avd.	91390310	X							
Hilde Ytre-Hauge (backup)	Hovedlab.	(6)1372	X							
Åse Aud Nyhus (backup)	Hovedlab.	(6)1364	X							
Martin S. Larsen (backup)	Prod.adm.	(6)1030	X							
Bjørn Berthelsen	On-line/Gasslab.	(6)1347		X			X			
Tom Gundersen	On-line/Gasslab.	(6)1365		X	X	X	X	X		
Ståle Lygre Hoff	Hovedlab.	1361		X			X	X		
Arne H. Odderstøl	A-skift	(6)1021		X			X			
Ken Roger Lindekleiv	A-skift			X						
Leif Ivar Fjære	B-skift	(6)1021		X						
Terje Abrahamsen	B-skift	(6)1021		X			X			
Tom M. Øksendal	C-skift	(6)1021		X			X			
Jarle Johannessen	C-skift	(6)1021		X			X			
Tore Dyrkolbotn	D-skift	(6)1021		X			X			
Tom Sløgedal	D-skift	(6)1021		X			X			
Einar Andreassen	E-skift	(6)1021		X						
Magne Egebakken	E-skift	(6)1021		X						